

50. The apparatus of claim 41 wherein said substrate has a size of 300 mm by 400 mm, and said laser light having a rectangular form has a size of 2 mm x 350 mm.

51. The apparatus of claim 42 wherein said substrate has a size of 300 mm by 400 mm, and said laser light having a rectangular form has a size of 2 mm x 350 mm.

52. The apparatus of claim 44 wherein said substrate has a size of 300 mm by 400 mm, and said laser light having a rectangular form has a size of 2 mm x 350 mm.

53. The apparatus of claim 45 wherein said substrate has a size of 300 mm by 400 mm, and said laser light having a rectangular form has a size of 2 mm x 350 mm.

54. The apparatus of claim 46 wherein said substrate has a size of 300 mm by 400 mm, and said laser light having a rectangular form has a size of 2 mm x 350 mm.--

Please cancel claim 43.

REMARKS

This amendment responds to the Official Action mailed May 14, 1996. Filed concurrently herewith is a *Request for a One Month Extension of Time* which extends the shortened statutory period of response to September 16,

1996. Accordingly, applicant respectfully submits that this response is being timely filed.

Claims 8-15, 21-23, 27-29, 35-36 and 41-46 were pending, where claims 35 and 36 are withdrawn from consideration. In this submission, claims 8, 21, 27, 41, 42, 44-46 have been amended in order to more clearly define protection to which applicant is entitled. Claim 43 is cancelled without prejudice or disclaimer, and new claims 47-54 are submitted for examination on the merits. Accordingly, claims 8-15, 21-23, 27-29 and 41, 42 and 44-54 are now pending in the present application and, for the reasons set forth below, are believed to be in condition for allowance.

PRIOR ART REJECTIONS

The Official Action rejects claims 8-11, 13, and 27-29 as anticipated by or, in the alternative, as obvious over U.S. Patent No. 5,194,398 to Miyachi et al. This rejection is respectfully traversed in view of the amendments herein, and reconsideration is requested based on the following remarks.

The present invention is directed to an apparatus for processing a semiconductor including an irradiation apparatus emitting a laser light having a rectangular form. The Applicants have found, as described in the second full paragraph on page 8 of the present application, that using a linear laser light having a large-enough cross section enables the whole surface of the semiconductor substrate to be treated by the linear laser beam as the semiconductor substrate is moved gradually through the light processing chamber. This provides a more effective and time-efficient method of treating

the semiconductor substrate with laser light since an entire linear width of the surface of the substrate can be treated with a linear laser light.

The Examiner's attention is directed to page 8, lines 12 to 20 of the specification of the present invention, where the cross section of the laser beam is described in detail. The laser beam is shaped into a rectangular form measuring 2 mm x 350 mm and has a length 350 mm longer than a length 300 mm of a side of the substrate measuring 300 mm x 400 mm, so that the whole surface of the substrate is treated with the laser beam. As stated in page 8 of the specification, if the holder moves at a speed of 20 mm/sec, the time taken to process one substrate is $400/20 = 20$ seconds. Therefore, the holder is moved in a direction parallel to the substrate side having another length 400 mm while the substrate side having the length 300 mm is oriented in a direction parallel to a direction of a side having 350 mm of the rectangular form of the laser beam. Independent claims 8, 27, 41, 42, 44, 45 and 46 amended in accordance with the enclosure of this letter have the limitation "to scan said semiconductor with said laser light over a whole surface of said substrate." Therefore, the claims of the present invention recite these features having the advantage that the semiconductor film is scanned over the whole surface of the substrate in a short time period, e.g. 20 seconds in the above example. This feature is not disclosed by the Miyachi et al. reference. In view thereof, reconsideration of the above claims as amended is requested.

The Official Action rejects claims 21-23 as obvious over Miyachi et al. in view of U.S. Patent No. 4,888,305 to Yamazaki et al. Claim 21 has been amended as shown above to recite that the laser light has a rectangular form. Since neither Yamazaki et al. or Miyachi et al. disclose irradiating a semiconductor with a laser light having a rectangular form, this rejection is

respectfully traversed for the same reasons as set forth above in connection with the rejection of claims 8-11, 13, and 27-29, and reconsideration is respectfully requested.

The Official Action rejects claims 8, 14, and 15 as obvious over U.S. Patent No. 5,310,410 to Begin et al. in view of Miyachi et al. In view of the above-described amendment to claim 8, this rejection is respectfully traversed for the same reasons set in the previous rejection of claim 8. Neither Begin et al. or Miyachi et al. disclose scanning a semiconductor with a laser light over a whole surface of the substrate using a laser light having a rectangular form where the length of the laser light is longer than the substrate. In view of the above amendments, the cited prior art references do not provide a showing of structural similarity with the claimed invention. In *In re Dillon*, 16 U.S.P.Q.2d 1897 (1990), the full Court of Appeals for the Federal Circuit held that in making an obviousness rejection, the Patent Office must make a prima facie case of obviousness, including both (1) a showing of structural similarity between one or more prior art references and the claimed invention, and (2) some specific motivation in the prior art references for combining the references in the manner asserted. Accordingly, since the combination of prior art does not produce the claimed invention, there has not been a showing of structural similarity between the prior art references and the claimed invention. Reconsideration is respectfully requested.

The Official Action rejects claims 41-46 as obvious over Begin et al. in view of Miyachi et al., U.S. Patent No. 4,937,205 to Nakayama et al., U.S. Patent No. 5,200,017 to Kawasaki et al. and further in view of U.S. Patent No. 5,292,675 to Codama. In view of above amendments to claims 41, 42, and 44-46, this rejection is respectfully traversed. None of the cited prior

art references appear to disclose scanning a semiconductor with a laser light over a whole surface of the substrate using a laser light having a rectangular form where the length of the laser light is longer than the substrate, as claims 41-46 have been amended to recite. It is respectfully submitted that this combination of prior art does not produce the requisite structural similarity to the claimed invention, and the obviousness rejection can not, therefore, be maintained. Reconsideration is respectfully requested.

FORMALITIES

The Official Action rejects claims 8-15, 21-23, 27-29, 41, 42, and 44-46 under 35 U.S.C. § 112, first paragraph, and also objects to the specification for not providing a definition for "linear laser light." As the Official Action notes, the Examiner presumes that "linear" laser light is referring to a laser beam shaped into a rectangular form, as described on page 8 of the specification. This presumption is correct and the claims of the present invention have been amended to describe the laser light as being shaped into a rectangular form rather than being described as linear. Therefore, the specification provides proper support for the present invention as presently claimed.

The Official Action also rejects claims 8-15, 21-23, 27-29, 41, 42, and 44-46 under 35 U.S.C. § 112, second paragraph, as it is unclear what is meant by the term "linear laser light." As described above, these claims have been amended to replace the term "linear laser light" with the term "laser light having a rectangular form." Therefore, it is submitted that the claims

particularly point out and distinctly claim the subject matter which Applicants regard as the invention, and reconsideration is requested.

CONCLUSION

In each case, the pending rejections should be reconsidered in view of the amendments and remarks herein. Applicants believe that this case is in good condition for allowance, and a Notice of Allowance is earnestly solicited. If a telephone or further personal conference would be helpful, the Examiner is invited to call the undersigned, who will cooperate in any appropriate manner to advance prosecution.

Respectfully submitted,



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